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FISH & RICHARDSON, PC
4350 LA JOLLA VILLAGE DRIVE
SUITE 500
SAN DIEGO, CA 92122

| EXAMINER |
|---|
| SODERQUIST, ARLEN |

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| 1743 | 24 |

DATE MAILED: 10/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

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# Office Action Summary

| Application No. | Applicant(s) |
|---|---|
| 09/409,644 | Lewis et al |
| **Examiner** | **Art Unit** |
| Arlen Soderquist | 1743 |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) ☒ Responsive to communication(s) filed on *Sep 23, 2002*.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

**Disposition of Claims**

4) ☒ Claim(s) *50-72, 85-90, 98-110, 112-124, and 126-158* is/are pending in the application.

4a) Of the above, claim(s) *50-72 and 85-90* is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *98-110, 112-124, and 126-158* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

**Application Papers**

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☒ The proposed drawing correction filed on *Sep 23, 2002* is: a) ☒ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). *16*
4) ☒ Interview Summary (PTO-413) Paper No(s). *19*
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

1. Applicant's request for reconsideration of the rejection of the last Office action brought up issues that should have been included in the last office action, therefore, the finality of that action is withdrawn.

2. Claims 124 and 133 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The limitation of claim 124 is found in claim 108 and thus fails to further limit claim 108. The limitation found in claim 133 presents all possible combinations for the conductive organic material and therefore fails to further limit claim 131 because it is of the same scope as claim 131.

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 98-99, 101, 104-105, 108-110, 112, 114-118, 120-122, 124, 128-134, 136-140, 143-147 and 152-158 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Each of the above claims requires the inorganic conductor to be selected from a group that includes doped semiconductors and also requires the conductivity of the inorganic group to decrease as temperature increases. This is in direct opposition to the definition of a semiconductor found on page 34, lines 10-14. Thus the inorganic conductor cannot be both a semiconductor and exhibit the required electrical properties. It is noted that claim 126 does not have this problem because it follows the term "metal" with the definition of a metal found in the specification. With respect to claims 117-118 and 139-140 table 2 on page 28 lists carbon black as an organic conductor which is not consistent with these claims that claim carbon black as an inorganic conductor.

5. Claims 112, 121, 123 and 143 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 112 contains a comparative phrase "compositionally the same or compositionally different" which has no comparative basis. In claims 108 and 112 there is only one sensor that is defined to have a conductive organic material. If claim 112 were required to have a plurality of sensors with the composition as defined in claim 108, then the limitation would have the same problem as claim 133 above. Claims 121 and 143 do not have proper antecedent basis for "a mixed inorganic-organic complex" since claims 108 and 128 use the term "conductor". Additionally these claims contain "a metal oxide" as a member of the Markush group which is not found in the possibilities listed for the conductive material compositionally different from the conductive organic material in claims 108 and 128. Claim 123 is indefinite since the sensor array in not required to have a plurality of sensors with the necessary composition.

6. The following is as a quotation of 35 U.S.C. 103(as a) which forms the basis for all obviousness rejections set forth in this Office action:

> (as a) as a patent may not be obtained though the invention is not identically disclosed or described as a set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a as a whole would have been obvious at the time the invention was made to as a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing as a background for determining obviousness under 35 U.S.C. 103(as a) are summarized as a follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 98-110, 112-124 and 126-158 are rejected under 35 U.S.C. 103(as a) as a being unpatentable over Gibson in view of Casella, de Lacy Costello, Thackeray, Yamato, Galal, Naarmann, Li (Materials Research Society Symposium Proceedings, 1995), Sakaguchi, Sestak,

Torsi or Wampler (last seven newly cited and applied) and Breheret, Mifsud (both US 5,801,297 and WO 95/08113), Moy or Persaud (WO 86/01599). In the patent application Gibson teaches an odor sensor. as a personnel recognition sensor comprises as a multiplicity of differentially responding chemo-resistor elements, each element comprising as a nonconductive substrate, as a plurality of electrodes disposed on the substrate and one or more layers of as a conductive polymer overlaying the electrodes, the conductive polymers of at least two of the elements being different; as a detector responsive to signals provided by the multiplicity of elements and arranged to provide an output signal characteristic of the multiplicity of signals; the elements being disposed in as a housing having an inlet arranged so that as a gaseous sample passing into or through the inlet contacts all of the elements in use. Page 12 teaches as a material having two different monomers used to form as a copolymer which examiner is treating as a within the scope of two different conducting materials. Page 13 shows several different polymeric materials that are usable in the invention along with ionic dopants for incorporation into the conducting films. In the paragraph which these components are taught Gibson also teaches that copolymers and blends of the polymers listed can be used as a the polymer. Pages 14-15 teach the materials used as a sensing materials in the sensor of figure 1. Gibson does not teach the extent of the compositions in which the two conductive materials are mixed together to form as a single sensing material having the compositionally different conductive material within the conductive organic material or as a sensing array having sensors that are not organic polymer based.

In the paper Casella discusses copper dispersed into polyaniline films as a an amperometric sensor in alkaline solutions of amino acids and polyhydric compounds. As a chemically modified electrode composed of copper microparticles dispersed into as a polyaniline (PANI) film was studied as a an amperometric sensor of scantly electroactive compounds possessing -OH and -$NH_2$ groups. Glassy carbon was used as an electrode material and modified firstly by a PANI film, then allowed to stand in contact with a solution of copper ions, and finally, the electroreduction was done at -0.3V. The electrochemical behavior of the resulting modified electrode in alkaline medium was examined by cyclic voltammetry and flow-injection amperometry. Using some representative compounds, the effect of copper loading and pH on the

electrode response was studied. Constant-potential amperometric detection was applied in conjunction with anion-exchange chromatography (AEC) separations of amino acids and carbohydrates. At an applied potential of 0.55 V vs. Ag/AgCl, the detection limits (S/N = 3) for all analytes studied ranged 5-15 pmol, and the linear dynamic range was three-four orders of magnitude above the detection limits. The resulting modified electrode was found to retain 95% of its initial response in flowing streams for 3 hours of operating time. From the title at least it is clear that the copper particles are dispersed **into** the polyaniline films.

In the paper de Lacy Costello teaches composite organic-inorganic semiconductor sensors for the quantitative detection of target organic vapors. Composites of tin dioxide (an n-type semiconductor) and derivative of the conducting polymer polypyrrole (a p-type semiconductor) gave reversible changes in electrical resistance at room temperature when exposed to a range of organic vapors. The optimum amount of polymer giving highest sensitivity was found to be 2.5% by mass for the polypyrrole chloride-tin dioxide composite. Composites containing 2.5% polymer by mass, but differing in polymer derivative were fabricated and exposed to low concentrations of ethanol, methanol, acetone, methyl acetate and ethyl acetate. All gave significant and reversible decreases in electrical resistance. Direct comparison with sensors constructed solely of tin dioxide or polypyrrole at room temperature showed the composites to be more sensitive. The gas sensitivity of the composite materials depended on the type of polymer derivative incorporated and the dopant anion associated with the polymer. The composites were simple to fabricate and gave differing response profiles to a range of organic vapors.

In the paper Thackeray teaches chemically responsive microelectrochemical devices based on platinized poly(3-methylthiophene)and shows variation in conductivity with variation in hydrogen, oxygen, or pH in aqueous solution. Microelectrochemical transistors can be prepared by connecting 2 closely spaced (~1.2 μm) Au microelectrodes (0.1 μm thick × 2.4 μm wide × 50 μm long) with anodically grown poly(3-methylthiophene). The amount of poly(3-methylthiophene) used involves about $10^{-7}$-$10^{-6}$ mol of monomer/$cm^2$. Poly(3-methylthiophene) can be platinized by electrochemical reduction of $PtCl_4^{2-}$ at the pair of coated electrodes. The change in conductivity of poly(3-methylthiophene) with change in redox potential is the basis for

amplification of electrical or chemical signals; the conductivity varies by 5-6 orders of magnitude upon change in potential from +0.2 (insulating) to +0.7 (conducting) V vs. SCE in aqueous electrolyte. The Pt equilibrates poly(3-methylthiophene) with the $O_2/H_2O$ or $H_2O/H_2$ redox couples. [Poly(3-methylthiophene)/Pt]-based transistors are shown to be viable room-temperature sensors for $O_2$ and $H_2$ in aqueous solution. The $O_2$ reproducibly turns on the device, with 1 atmosphere of $O_2$/0.1 M $HClO_4/H_2O$ showing 0.7-mA $I_D$ at a $V_D$ = 0.2 V; $H_2$ reproducibly turns off the device, with 1 atmosphere of $H_2$/0.1 M $HClO_4/H_2O$ showing less than 20-nA $I_D$ at a $V_D$ = 0.2 V, where $V_D$ (drain potential) is the applied potential between the 2 Au microelectrodes and $I_D$ (drain current) is the current that passes between the 2 microelectrodes. The turn on with $O_2$ is complete within 2 minutes, and the turn off with $H_2$ is complete within 0.3 minutes. A platinized microelectrode of a dimension similar to the microelectrochemical transistor shows only 1.0-nA reduction current upon exposure to 1 atmosphere of $O_2$; the current amplification of the transistor is thus a factor greater than $10^5$. The transistor device can also reproducibly respond to pH changes in the pH range of 0-12, when there is a constant $O_2$ concentration; there is a reproducible change in $I_D$ to alternate flow of a pH 5.5/pH 6.5 stream for over 10 h. The device responds to an injection of $10^{-6}$ L of 0.1 M $HClO_4$ into an effluent stream of 0.1 M $NaClO_4$ (flowing at 2 mL/min) within 4s. Study of the resistance properties of [poly(3-methylthiophene)/Pt] vs potential reveals that Pt has little effect on the intrinsic conductivity of poly(3-methylthiophene). Rather, the role of Pt is purely as a catalyst to allow equilibration of $O_2$ and $H_2$ with the polymer. The amount of Pt used in approximately $10^{-7}$ mol/cm$^2$, and microscopy shows Pt to be present as a particle of less than 0.1-μm size.

In the paper Yamato presents a new method for dispersing palladium microparticles in conducting polymer films and its application to biosensors. Composite films of polypyrrole/sulfated poly(β-hydroxyethers) (PPy/S-PHE) are electrically conducting and mechanically flexible. Palladium particles were dispersed in the films by thermally decomposing bis(dibenzylideneacetone)palladium(0) complex which had been absorbed by the films from a CHCl3 solution. This method for loading metal particles was enabled by the high affinity of the composite films for organic compounds. TEM and energy-dispersive x-ray spectrometry (EDX)

analyses revealed that fine palladium particles in the nanometer range are dispersed in the PPy/S-PHE conducting films. a glucose sensor based on the detection of hydrogen peroxide was prepared by immobilizing glucose oxidase (GOD) using glutaraldehyde on a Pd/PPy/S-PHE electrode. This biosensor responded to glucose even at 400 mV vs. Ag/AgCl, which is lower than the working potential of conventional glucose sensors prepared on a platinum electrode.

In the paper Galal teaches electrocatalytic oxidation of some biologically important compounds at conducting polymer electrodes modified by metal complexes. Conducting poly(3-methylthiophene) electrodes were electrochemically prepared. The resulting polymer films were modified with an inorganic/organic complex, ferrocene. The incorporation of the ferrocene/ferrocenium moiety into the polymer film resulted in enhanced charge transfer towards the oxidation of some organic molecules of biological interest. The electrochemical response of the complex-containing polymer electrode was compared to that of the unmodified polymer electrode and that of the substrate. Apparent diffusion coefficients of the redox species were estimated from the cyclic voltammetric data for different biological molecules at the ferrocene-containing polymer electrode. Infra-red spectroscopic measurements for the "as-grown" films revealed the presence of the inorganic/organic complex within the polymer. The modified polymer electrode showed noticeable enhancement for the charge transfer across the film interface and can be used as an electrochemical sensor for biological compounds.

In the published application Naarmann teaches manufacture and use of electrically conductive polymers of five-membered heterocyclic compounds and anions of tetrathiafulvalene derivatives. The polymers are prepared by electrochemical oxidative polymerization of 5-membered heterocyclic compound(s) in the presence of conducting salts containing anions of tetrathiafulvalene derivatives. The polymers are used as sensors or battery electrodes. Derivatives of tetrathiafulvalene were synthesized. a solution of 1 part pyrrole and 1 part $NH_4$. salt of 3,6-di-ω-sulfobenzyloxy-1,2,4,5-benzo-bis(11,11',12,12'-dibenzotetrathiafulvalene) in 100 parts MeCN was electropolymerized by using Pt electrodes. The obtained polymer film had an electrical conductivity of 80 S/cm and showed a superior stability in a 1-week storage in water to a $ClO_4^-$-containing polypyrrole film.

In the paper Li teaches the preparation and characterization of polyaniline-palladium composite films. Electrosynthesized polyaniline (PANi) can be chemically functionalized by incorporation of palladium clusters. The functionalization of electrochemically, freshly prepared and dried PANi film occurs spontaneously during the relaxation process. This process is carried out in sulfuric acid containing palladium salt. The material properties of the new composite PANi-Pd film were investigated by applying electrochemical, UV-visible spectroscopic and surface microscopy techniques. The PANi-Pd composite materials behaved electrochemically different than PANi film alone or Pd film deposited electrochemically. This finding is particularly important for developing layers for chemical gas sensors, electrocatalysis or supercapacitors applications.

In the published application Sakaguchi teaches electrodes for gas sensors using electrode reaction. The electrodes consist of a composite of a resin compound, a conductive resin compound, and optionally an organic metal complex compound. Preferably, a conductive resin compound is manufactured by chemical oxidation polymerization or electrolytic polymerization. The gas sensors are useful for detection of gas components in exhaust gases and combustion waste gases, and have long life. From the attached Chemical Abstracts abstract it is clear that at least polypyrrole is disclosed as a conductive resin and cobalt phthalocyanine are disclosed. The JPO abstract teaches iron or platinum complexes with phthalocyanine and naphthalocyanine also being used.

In the paper Sestak teaches selective hydrogen sensors based on conducting polymers. As part of a program focussed on the development of selective conducting polymer gas sensors, the authors have studied the behavior of polyaniline-platinum oxide chemoresistors in the presence of combustible gases such as hydrogen, methane, ethylene, acetylene and carbon monoxide. The authors report on results obtained using a polyaniline-platinum oxide sensor. By hydrogen atmosphere preconditioning, the authors were able to increase the selectivity and sensitivity of the sensors for hydrogen in air at concentrations between 1000 and 5400 ppm. The introduction teaches some of the ways in which conducting polymer films have been used as sensor materials

including chemoresistors and electrochemical cells along with advantages and/or disadvantages of the respective formats.

In the paper Torsi teaches conducting polymers doped with metallic inclusions as new materials for gas sensors. Electrochemically synthesized conducting polymers, such as polypyrrole and poly-3-methylthiophene, were doped with copper and palladium inclusions. These metals are deposited potentiostatically either on the pristine conducting films or on the partially reduced samples. The procedure to form the inclusions in the polymer matrix is found on page 363. Gas sensor devices based on these doped organic films show interesting performances in detecting reducing gases such as $NH_3$, $H_2$ and CO.

In the paper Wampler discusses the chemical synthesis and characterization of composites of polypyrrole and carbon black. a new class of molecular composites of carbon black and an electronically conducting polypyrrole has been synthesized by chemically polymerizing pyrrole in an aqueous dispersion of carbon black. The carbon black content of these composites can be varied from ~5% to ~85% (by weight). The surface areas and densities of these composites were compared to corresponding mixtures of carbon black and polypyrrole. The influence of carbon black on the efficiency of polymerization of pyrrole is described. The effect of carbon black content on the electronic conductivity of the composite has been mapped, and compared with the corresponding behavior of a mixture of carbon black and poly(vinyl chloride). The influence of the parent black characteristics (porosity, void vol., surface area) on the electronic conductivity of the resultant composite has been probed by comparing the behavior of composites derived from six commercial and experimental blacks. The temperature dependence of the composites has been studied as a function of the carbon black content. The application of these new materials is examined. The first page of the paper teaches that these potential application include sensors, electrocatalysis, super capacitors and fuel cells. In the sentence bridging pages 1811-1812 Wampler teaches that other similar composites of conducting polymers with polymers, metals, or metal oxides has extended the scope of their use. The paper clearly shows that the composite is superior to either component of the composite when applied to the electrocatalysis of chromium(VI) to chromium(III).

In the paper Breheret presents online differentiation of mushrooms aromas by combined headspace/multi-odor gas sensors devices. a specially designed measurement cell for direct headspace analysis, online connected to (I) a gas chromatograph equipped with an headspace injector and a sniffing-port, (ii) multisensors devices: five semiconductor gas sensors and twenty conducting polymer gas sensors, was used to discriminate nine mushrooms' aromas. The raw data of gas sensors were statistically processed, and provided pictorial presentation under sample distribution in a plan, allowing to compare the different mushrooms' aromas, with the GC/sniffing analysis. Semiconductor gas sensors succeeded in classifying four groups based on overall odor. Semiconductor gas sensors seem to be more appropriate for the mushrooms aromas discrimination than conducting polymer gas sensors. These preliminary results confirm the interest of such technologies for chemotaxonomy differentiation of wild mushrooms.

In the patent and patent application Mifsud teaches methods and devices for the detection of odorous substances and applications. a device for carrying out a method of odor detection including, in particular, a plurality of chambers, each having a plurality of semi-conductor gas sensors, conductive polymer gas sensors, surface acoustic wave gas sensors, as detection means, a variable flow gas pump for forming a gas flow in said chambers, measurement electronic device for operating the detection means, a data processing unit for recording in a file the olfactory prints obtained using the detection means, and for comparing the detected impressions with those in the file so that odors may be identified and recognized. Applications, especially to drugs, explosives, body odors and food seals.

In the paper Moy discusses transient signal modeling for fast odor classification. The Fox 2000 is an electronic nose system using an array of 6, 12, or 18 gas sensors. The anal. of sensor signals coming from a combination of metal oxide sensors and conducting polymer elements indicates the ability of predicting in only a few seconds the nature of a sample (hams, sausages, cereals...) from its olfactory fingerprint. The simulation of the signals is performed via exponential functions and applied to various foodstuffs. Online and real time Artificial Neural Network (ANN) have also been investigated for fast odor classification and recognition. Six different brands of sausages (pure pork, beef/pork sausages) have been analyzed using a 6-

element array. Six samples of each type of sausage were measured 12 times and discriminant analysis was performed over the set of 72 samples using the raw data of acquisition. 94% Of the samples were correctly classified and cross validation (testing unknown samples) gave an overall success rate of 83% correctly classified samples. These results indicate the possibility to use electronic noses and pattern recognition methods for fast odor classifications.

In the published application Persaud teaches gas sensors. a sensor for gases, vapors, or odors has an organic polymeric semiconductor element which changes its electrical resistance in the presence of certain gases. The polymer is formed by electrolytic deposition on the substrate from a solution of its monomer, the solution comprising a solvent medium in which the monomer is sparingly soluble, a protic solvent, and an ionic base. a number of different gas detectors can be used to obtain from each a characteristic response to the presence of a gas, and the combination of responses can be used to distinguish between gases. The different detectors may be all based upon organic polymers, or one or more detectors may use other principles such as flame ionization or gas chromatography. The sensor is useful in monitoring industrial environments, gas liquid chromatography, quality control in food and drinks production, and food production. Page 14, line 2-9 teach that the different types of sensors can allow the device to detect between odors that it might not otherwise be able to discriminate. Page 16, lines 15-21 teach that an alternative form of the sensor is as a polymer coated field effect transistor.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Casella, de Lacy Costello, Thackeray, Yamato, Galal, Naarmann, Li, Sakaguchi, Sestak, Torsi or Wampler relative to the incorporation of conductors such as carbon black, metal particles or metal oxide into the conductive organic polymers used in the sensing arrays of Gibson because of their sensitivity to known analyte gases or enhanced sensing and/or stability properties as taught by each of Casella, de Lacy Costello, Thackeray, Yamato, Galal, Naarmann, Li, Sakaguchi, Sestak, Torsi or Wampler compared to sensors made with only the conductive polymers taught by Gibson. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate other types of sensors such as the metal oxide and/or surface acoustic wave devices taught by Breheret, Mifsud, Moy or

Persaud into the Gibson device because of the ability to use them in combination to discriminate odors that would not easily be discriminated by a single type of sensor as taught by Breheret, Mifsud, Moy or Persaud.

8. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection. Relative to references which remain applied against the claims examiner presents the following comments. The anticipation by Gibson is no longer being asserted, however the secondary references clearly show that the claimed composites are known as gas sensors or would have been expected to form a sensing material that would have enhanced properties relative to the conducting polymers used by Gibson. It is also noted that the temperature/conductivity characteristics of the inorganic conductors is not relevant to all claims (126-127 or example). Because of this and the issues which caused the 112 first paragraph rejection above, the de Lacy Costello reference is appropriate relative to the claimed devices. Relative to the presence of copper in the polymer matrix in the Casella reference applicant is directed to the title of the paper as evidence that the particles are found in the polymer matrix. The Thackeray reference is clearly sensitive to gases -- hydrogen and oxygen. Relative to the Breheret, Mifsud, Moy or Persaud references, they are not intended to teach modifying the polymer composition, but are used relative to claims that require sensors of a type other than the senor material in claim 98. These references are also present for their teachings relative to the structure used to allow the sensors to contact the analyte containing gas.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additionally cited art relates to materials or structures used in detection sensors.

10. Relative to the request for receiving initialed copies of PTO-1449 forms submitted October 23, 2000 and February 20, 2002. The second one has been found and is being included with this action. However there is no IDS that was sent by applicant on October 23, 2000 in the examiner's file. IDS statements sent by applicant that are present in the file have dates of December 6, 1999, March 15, 2000, September 6, 2000 and February 20, 2002.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arlen Soderquist whose telephone number is (703) 308-3989. The

examiner's schedule is variable between the hours of about 5:30 AM to about 5:00 PM on Monday through Thursday and alternate Fridays.

For communication by fax to the organization where this application or proceeding is assigned, (703) 305-7719 may be used for official, unofficial or draft papers. When using this number a call to alert the examiner would be appreciated. Numbers for faxing official papers are 703-872-9310 (before finals), 703-872-9311 (after-final), 703-305-7718, 703-305-5408 and 703-305-5433. The above fax numbers will generally allow the papers to be forwarded to the examiner in a timely manner.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

October 18, 2002

ARLEN SODERQUIST
PRIMARY EXAMINER